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TITLE: Psychological Distress, Cognitive Bias, and Breast Cancer
Surveillance Behavior in Women Tested for BRCA 1/2 Mutation

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FOREWORD

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N/A In conducting research using animals, the investigator(s) adhered to the "Guide for the Care and Use of Laboratory Animals," prepared by the Committee on Care and use of Laboratory Animals of the Institute of Laboratory Resources, national Research Council (NIH Publication No. 86-23, Revised 1985).

X For the protection of human subjects, the investigator(s) adhered to policies of applicable Federal Law 45 CFR 46.

N/A In conducting research utilizing recombinant DNA technology, the investigator(s) adhered to current guidelines promulgated by the National Institutes of Health.

N/A In the conduct of research utilizing recombinant DNA, the investigator(s) adhered to the NIH Guidelines for Research Involving Recombinant DNA Molecules.

N/A In the conduct of research involving hazardous organisms, the investigator(s) adhered to the CDC-NIH Guide for Biosafety in Microbiological and Biomedical Laboratories.


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Date

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Introduction

This summary is for the fourth (no-cost extension) year of the project. During this year, the PI traveled to the Era of Hope conference to present results. In addition, primary findings were published in Health Psychology, and additional research supported by the project was presented at the annual meeting of the Society of Behavioral Medicine. These results are currently submitted for review. As the project formally ended last year, there is no other new information that was not already included in last year's summary. Below please find information from last year that summarizes the overall progress on the project.

This research project is aimed at examining psychological distress and processing of information associated with risk for breast cancer among women at risk for the disease. To that end, we have been recruiting women with and without family histories of breast cancer and assessing their levels of self-reported distress, their cognitive processing of cancer-related information, and their perceived risks for breast cancer and other diseases. Understanding the types and magnitude of women's distress and impaired processing of cancer-related information is critical because cancer-related distress has been associated with poorer compliance with screening behaviors, and impaired processing of cancer information may decrease women's knowledge and understanding of (and hence, compliance with) recommended screening guidelines. These concerns may be particularly salient among women who attend genetic counseling, as they receive complex, and oftentimes distressing information about their risk for the disease. The research project was one part of a larger training experience for the PI. Accomplishments in both the training and research components of the award to date are described below.

Training Accomplishments

As in the first 3 years of the training program, during the past year, the PI had the opportunity to participate in the diverse didactic training offerings of the Cancer Prevention and Control and Biobehavioral Medicine programs at Mount Sinai. This was in addition to weekly meetings with Mentor Bovbjerg to discuss issues related to the research. Scheduled colloquia, as well as informal lunch meetings with Mount Sinai faculty from the Cancer Center, Departments of Oncology, Radiology, and Human Genetics were regularly attended. In addition, special seminars from invited guest lecturers were periodically scheduled, providing an opportunity to forge broader connections and establish networks of collaboration. The PI worked closely with Ms. Karen Brown, director of Cancer Genetic Counseling in the Department of Human Genetics, who is at the forefront of risk communications to patients. Regular biostatistical core lectures by Dr. Gary Winkel both at the Cancer Center and at the CUNY graduate center provided ample opportunity for development of advanced biostatistical and data-analytic skills. Guest lecturers included many noted scholars of biobehavioral medicine. In addition, the PI was once again afforded the opportunity to teach one class session of the Center's core course, Introduction to Behavioral Medicine, which was attended by physicians, nurses, medical students, and students in

Mount Sinai's genetic counseling program. Through weekly "work-in-progress" meetings, the PI was afforded the opportunity to present his ongoing research, providing a forum to further hone presentation and communication skills. Finally, the PI had the opportunity this past year to both present his work at a national meeting in Salt Lake City, UT, and at the Era of Hope Meeting in Orlando, FL, and meet other investigators in the field with similar interests and share ideas.

Research Accomplishments

The research accomplishments are unchanged from last year, except for an update of the "Reportable Outcomes."

Key Research Accomplishments During Three-year Project Period:

- Characterized distress levels in women with family histories of breast cancer
- Demonstrated that breast cancer mortality in the family, as well as caring for a breast cancer patient significantly impacts distress levels, even years later.
- Demonstrated that this distress predicts non-compliance with recommended screening behaviors.
- Identified aberrant processing of cancer-related information in women at familial risk for breast cancer
- Identified causal relations between thoughts of breast cancer and self-reported distress and blood pressure increases.
- Demonstrated that familial risk for breast cancer is related to overestimation of breast cancer risk, but underestimation of cardiovascular disease and colon cancer risks.
- Demonstrated that mass media grossly favors coverage of breast cancer vs. cardiovascular disease which may explain the highly inflated perceptions of personal risk for breast cancer, as well as the underestimation of cardiovascular disease risk among women
- Demonstrated that amount of knowledge gained by genetic counselees during counseling is predicted by distress levels.
- Developed and validated an instrument to assess knowledge gained during breast cancer genetic counseling (Knowledge Questionnaire)

Reportable Outcomes:

1. Bovbjerg, D., Erblich, J., and Valdimarsdottir, H. (1999). *Intrusive thoughts and perceived risk predict general distress in women with family histories of breast cancer.* Annals of Behavioral Medicine, 21. (Abstract).
2. Erblich, J., Bovbjerg, D., and Valdimarsdottir, H. (1999). *Caregiving and maternal breast cancer death predict current distress in women with family histories of breast cancer.* Annals of Behavioral Medicine, 21. (Abstract).
3. Erblich, J., Bovbjerg, D., and Valdimarsdottir, H. (1999). *Death of a first-degree relative from breast cancer predicts frequency of breast self-examination.* Annals of Behavioral Medicine, 21. (Abstract).
4. Erblich, J., Bovbjerg, D., and Valdimarsdottir, H. (2000). *Looking forward and back: Distress among women at familial risk for breast cancer.* Annals of Behavioral Medicine, 22, 53-59.
5. Erblich, J., Bovbjerg, D., and Valdimarsdottir, H. (2000). *Psychological distress, health beliefs and frequency of breast self-examination.* Journal of Behavioral Medicine, 23, 277-292.
6. Erblich, J., Bovbjerg, D., Norman, C., Valdimarsdottir, H., and Montgomery, G. (2000). *It won't happen to me: Lower perception of heart disease risk among women with family histories of breast cancer.* Preventive Medicine 31, 714-721.
7. Brown, K., Valdimarsdottir, H., Erblich, J., Amareld, J., Scheuer, L., Hull, J., McDermott, D., Bovbjerg, D., Hurley, K., and Offit, K. (2000). *Does genetic counseling for breast cancer predisposition increase knowledge?* American Journal of Human Genetics, 67 (suppl. 2), 106. (Abstract).
8. Erblich, J., Bovbjerg, D., Valdimarsdottir, H., Montgomery, G., and Cloitre, M. (2001). *Selective processing of cancer-related stimuli among women with family histories of breast cancer.* Annals of Behavioral Medicine, 23. (Abstract).
9. Bovbjerg, D., Montgomery, G., Erblich, J., Lee, M., Ng, K., and Sloan, R. (2001). *Psychophysiological reactivity to scripted imagery of undergoing mammography screening for breast cancer.* Psychosomatic Medicine, 63. (Abstract).
10. Montgomery, G., Erblich, J., DiLorenzo, T., and Bovbjerg, D. (2002). *Perceived risk of cancer: It's not what you know but who you know.* Annals of Behavioral Medicine, 25. (Abstract).

11. DiLorenzo, T., Erblich, J., Montgomery, G., Ephron, R., Shaffren, M., and Bovbjerg, D. (2002) *Family histories of disease and disease-specific worry: The role of perceived risk*. Annals of Behavioral Medicine, 25. (Abstract).
12. Blanchard, D., Erblich, J., Montgomery, G., and Bovbjerg, D. (2002). *Read all about it: The over-representation of breast cancer in popular magazines*. Preventive Medicine, 35, 343-348.
13. Erblich, J., Montgomery, G., Valdimarsdottir, H., Cloitre, M., and Bovbjerg, D. (2003). Biased cognitive processing of cancer-related information among women with family histories of breast cancer: Evidence from a cancer Stroop task. Health Psychology.
14. Erblich, J., Brown, K., Livingston, B., Kim, Y, Valdimarsdottir, H., and Bovbjerg, D. (2003). *Development and validation of a breast cancer genetic counseling knowledge questionnaire*. Annals of Behavioral Medicine, 25, S071. (Abstract).
15. Montgomery, G., Erblich, J., Dilorenzo, T., and Bovbjerg, D. (in press). *Family and friends with disease: Their impact on perceived risk*. Preventive Medicine.